

## **REMARKS**

As noted previously, the Applicant appreciates the Examiner's thorough examination of the subject application.

Claims 1-11 and 21-30 are pending in the application. All of the pending claims were rejected in the final Office Action mailed 16 March 2009 on various statutory grounds, described in further detail below. Claims 1-11 and 21-30 are listed herein as previously presented in Applicant's last paper. No new matter has been added.

Applicant requests reconsideration and further examination of the subject application in light of the following remarks.

### ***Claim Rejections – 35 U.S.C. § 103***

Concerning items 1-2 of the Office Action, claims 1-11 and 21-30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,865,205 to Wilmer ("Wilmer") in view of U.S. Patent No. 6,193,212 to Ohmi et al. ("Ohmi"). Applicant respectfully traverses the rejection and requests reconsideration for the following reasons. Incidentally, it is noted that the Examiner stated the rejection was under 35 U.S.C. § 102(e), but Applicant believes this was an inadvertent statement as the relevant section heading in the Office Action and also the related argument indicated that the rejection was under 35 U.S.C. § 103(a).

A conclusion of obviousness (or anticipation) requires that the reference(s) relied upon be enabling in that it/they put the public in possession of the claimed invention. One requirement for such is that the cited reference(s) must teach or suggest all of the limitations of the claim(s) at issue. This is not the case here, as will be explained. In particular, **the cited references fail to teach or suggest each and every limitation of the claims at issue, including the limitation of calculating mass flow when the outlet valve is open and as gas is exiting the open outlet valve.**

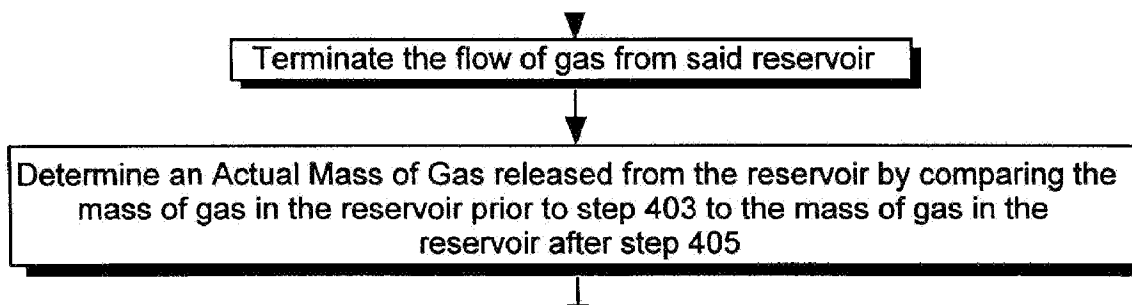
The system of claim 1 (representative of the independent claims pending in the application)

includes a first (inlet) and a second (outlet) valve and a pressure transducer/sensor that are connected to a chamber and to a controller. The controller is configured and arranged to control the operation of the valves so that a precise mass of a gas can be delivered through the second valve and calculated in real time when the outlet valve is open.

Of particular note, Applicant's controller continuously monitors pressure and temperature of the gas within the chamber, and calculates the actual mass delivered by Applicant's system while ("when") the outlet valve is open and delivering gas, thereafter closing the outlet valve at the precise time that a mass flow set point is calculated as having been reached, wherein the time is from about 100 milliseconds to about 500 milliseconds.

Wilmer is cited as the primary reference for the rejection. Wilmer is directed to methods and systems for controlling delivery of a gas from a reservoir to a semiconductor process chamber. The systems and methods of Wilmer fill a gas reservoir with gas, measures the temperature and pressure of the gas in the reservoir to determine the initial amount in the reservoir. After this, an outlet valve is opened, releasing gas through a variable flow valve and a sonic nozzle. See, e.g., Wilmer, col. 3, lines 1-10. The flow of gas is then stopped and again the system measures the temperature and pressure of the gas in the reservoir to determine the final amount in the reservoir. See, e.g., Wilmer, col. 3, lines Fundamental to the systems and methods of Wilmer are a comparison of gas quantities in a reservoir before and after gas delivery (not while the outlet valve is open) to determine the mass delivered.

The Wilmer systems/methods calculate mass in the reservoir before and after delivery of gas using a subtractive calculation to calculate the mass delivered only after the outlet valve is closed and the mass has been delivered. See, e.g., Wilmer, col. 9, lines 11-18 (including "The actual mass of gas released from the reservoir is then calculated by subtracting the final mass calculation from the initial mass calculation.") and the related portion of Wilmer FIG. 5, *infra*:



Importantly, if the mass in the gas flow delivered by the Wilmer system is insufficient for required purposes, the only recourse is to correct the error by a subsequent delivery process as the Wilmer system (like that of Nawata) **does not measure actual mass delivered by the system when the outlet valve is in an open condition.**

**Thus, the system of Wilmer is similar to the pulse shot regulator and pulse shot regulating method of Nawata (previously removed as a reference)** and does not teach or suggest Applicant's claimed techniques (systems and methods) for calculating actual mass delivered in real time when an output valve is opened and delivering gaseous mass and then causing the valve to close when the actual mass delivered reaches a desired amount.

While the Examiner contends for the rejection that "Wilmer is not specific in teaching the operation of his valves [internal citation omitted] with respect to the computer logic and processing claim in claims 1-8 and 21-29," the Applicant notes that **Wilmer actually is very specific about the operation of the valves:** Wilmer clearly teaches that temperature and pressure measurements are taken BEFORE and AFTER the gas exits the outflow valve of the system. Wilmer, col. 6, lines 10-21 (for the BEFORE measurements) and col. 7, lines 1-9 (for the AFTER measurement). Because of this, it is respectfully submitted that the Examiner has misapprehended the teaching of Wilmer.

The secondary reference, Ohmi, is cited by the Examiner for teaching a certain response time.

In contrast with Applicants' claims, Ohmi describes a fluid control valve and fluid supply/exhaust system. The control valve is described as having a response time in the order of

several milliseconds, as cited by the Examiner. The Ohmi reference teaches generally that its fluid control valve is “electrically controlled.” See, Ohmi, col. 10, lines 20-23. One embodiment of Ohmi is described as including a fluid supply and exhaust system used with a control computer and a unit control apparatus. See, e.g., Ohmi, col. 14, lines 38-48 and FIG. 10. Ohmi describes operation of the referenced system in vague and general terms of “control of the opening and closing of a plurality (maximally approximately 20) of fluid control valves by means of an operation signal S from a control computer 24 provided at a central control point.” See Ohmi col. 14, lines 38-48.

Ohmi is not understood as curing the previously noted deficiencies of Wilmer relative to Applicant’s claims.

The Examiner is reminded that **modification of the teachings of the references cannot change the principle of operation of the subject matter of the reference**. This appears to be the case here, as the Examiner has changed the discrete, before-and-after, measurements of Wilmer, with real-time, continuous measurements and calculations of Applicant’s claims.

As MPEP § 2143.01(VI) states, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). As the Federal Circuit has explained “rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR International Co. v. Teleflex Inc.*, , 550 U.S. at \_\_\_, 82 USPQ2d at 1396 (Fed. Cir. 2007) quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006).

Because of the foregoing reasons, the combination of Wilmer and Ohmi is an improper basis for a rejection of claims 1-11, and 21-30 under 35 U.S.C. § 103(a), and the rejections should be removed accordingly.

### ***Conclusion***

In view of the remarks submitted herein, Applicant respectfully submits that all of the pending claims in the subject application are in condition for allowance, and respectfully request a Notice of Allowance for the application.

If a telephone conference will expedite prosecution of the application, the Examiner is invited to telephone the undersigned.

Authorization is hereby given to charge our deposit account, No. 50-1133, for any fees required for the prosecution of the subject application, including those fees necessary for a Petition for Extension of Time under 37 CFR § 1.136 (two months).

Respectfully submitted,

McDERMOTT WILL & EMERY LLP

Date: 17 July 2009

/G. Matthew McCloskey/  
G. Matthew McCloskey, Reg. No. 47,025  
Attorney for Applicant  
28 State Street  
Boston, MA 02109-1775  
Telephone: (617) 535-4082  
Facsimile: (617) 535-3800